

NEW SYRPHIDAE FROM ISRAEL (DIPTERA)

M. KAPLAN AND F. CHRISTIAN THOMPSON

(MK) Department of Zoology, The George S. Wise Faculty for Life Sciences, Tel Aviv University, Tel Aviv, Israel; (FCT) Systematic Entomology Laboratory, IIBIII, Agric. Res., Sci. and Educ. Admin., USDA % U.S. National Museum of Natural History, Washington, D.C. 20560.

Abstract.—The following three new species of Syrphidae from Israel are described: *Paragus hermonensis* Kaplan (also from Italy); *Cheilosia sulcifrons* Kaplan (also from Turkey); and *Brachyopa quadrimaculosa* Thompson. *Cheilosia sareptana* Becker is redescribed and its lectotype designated. Keys to the Israeli species of *Paragus* and *Cheilosia* are given.

More than 100 species of Syrphidae have been collected in Israel during a survey carried out since 1971. About a fifth of these species were found, or are suspected, to be undescribed. Most of the undescribed species belong to the genus *Merodon* Meigen, which contains approximately 20% of the Israeli species of Syrphidae. *Merodon* will be dealt with in a coming paper. This paper deals with the other genera that contain undescribed species, namely *Paragus*, *Cheilosia*, and *Brachyopa*. The new species are described and placed in the most recent keys to the Palaearctic species of their respective taxa. Keys to the Israeli species of *Paragus* and *Cheilosia* are also given.

The new species are described to make their names available for the forthcoming Syrphidae part of the *Fauna Palaestina* series. This publication will include detailed information about the flower fly fauna, its contents and relationships, as well as keys to and descriptions of its components.

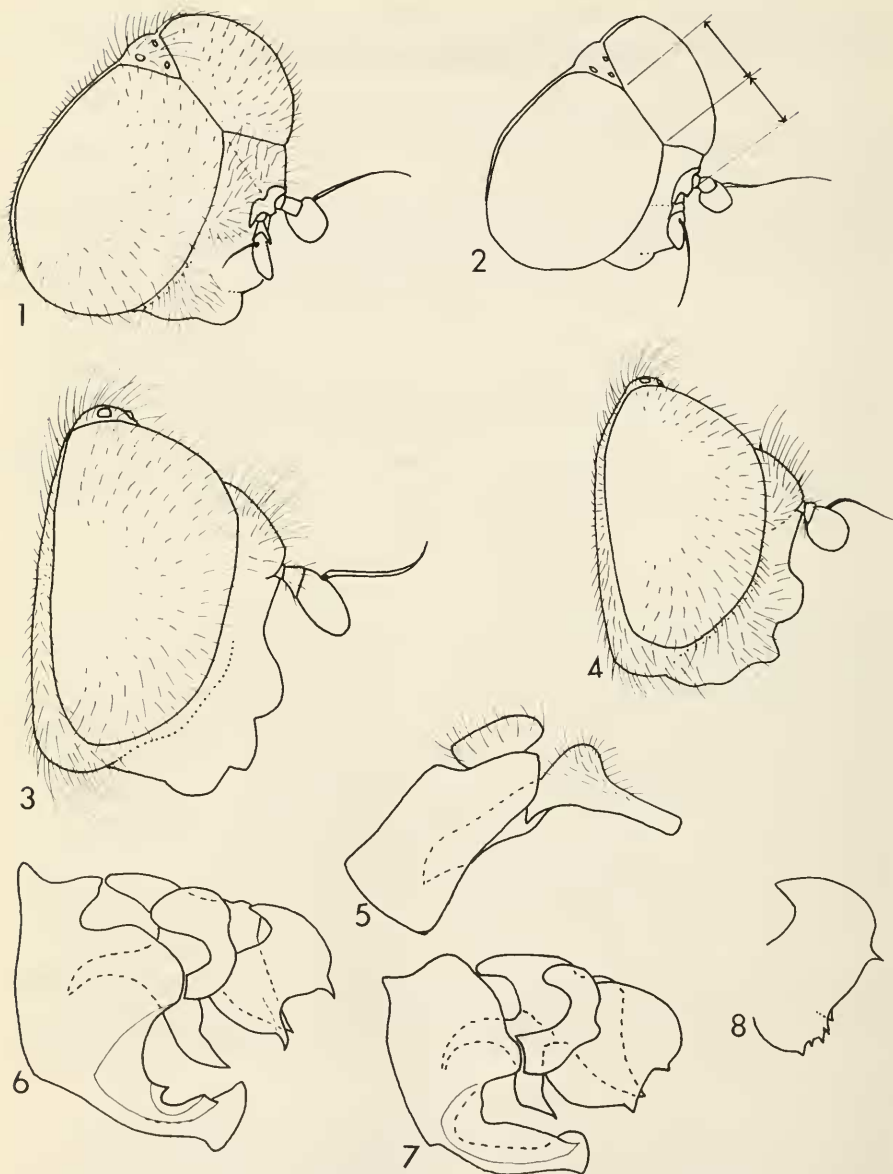
Genus *Paragus* Latreille

Seven species of *Paragus* have been found in Israel. These species belong to three species groups: *tibialis* group of the subgenus *Pandasyophthalmus*—*tibialis* Fallén and *haemorrhous* Meigen; *serratus* group of the subgenus *Paragus*—*azurea* Stuckenberg; and *bicolor* group of the subgenus *Paragus*—*bicolor* Fabricius, *compeditus* Wiedemann, *hermonensis* Kaplan, and *quadrifasciatus* Meigen. Stuckenberg has revised the afro-tropical species

of *Paragus* (1954b) and all the species of the *serratus* species group (1954a). Goeldlin (1976) has revised the European species of *Paragus*.

KEY TO THE SPECIES OF *PARAGUS* FOUND IN ISRAEL

1. Eye with unicolorous pile; spurious vein long, extending beyond discal crossvein 2
 - Eye with bicolorous pile, with alternating vittae of pale and dark hairs; spurious vein shorter, not extending beyond discal crossvein .. 3
2. Male: Sterna 3 and 4 subequal (Speight 1978: 104, Fig. 2b); surstyle and paramere subequal in length (Goeldlin 1976: 87, Fig. 4) *haemorrhous* Meigen
 - Male: Sternum 4 only about $\frac{2}{3}$ as long as 3rd (Speight 1978: 104, Fig. 2d); surstyle about $\frac{1}{2}$ as long as paramere (Goeldlin 1976: 87, Fig. 3) *tibialis* (Fallén)
(Females of these species are indistinguishable)
3. Scutellum with dentate margin *azureus* Stuckenberg
 - Scutellum simple, without dentate margin 4
4. Mesonotum shiny, with submedial pollinose vitta broadly interrupted and appearing as 2 maculae. Male: Surstyle with basoventral prong; lingula greatly enlarged, not distinctly differentiated from 9th sternum; aedeagus with basolateral lobe simple (Goeldlin 1976: 93, Fig. 6). Female: 7th tergum with dorsoapical tubercle (Goeldlin 1976: 101, Fig. 24) *quadrifasciatus* Meigen
 - Mesonotum shiny or dull, with submedial pollinose vitta continuous. Male: Surstyle without basoventral prong; lingula smaller, distinctly differentiated from 9th sternum, aedeagus with basolateral lobe complex. Female: 7th tergum simple, without any tubercles 5
5. Mesonotum shiny. Male: Lingula in profile emarginate apically, aedeagus with basolateral lobe without teeth (Goeldlin 1976: 93, Fig. 14). Female: Face entirely yellow (Goeldlin 1976: 101, Fig. 27) *compeditus* Wiedemann
 - Mesonotum dull. Male: Lingula not emarginate in profile, aedeagus with more complex basolateral lobe. Female: Face with black medial vitta 6
6. Abdomen extensively black; abdominal margin almost entirely black, rarely narrowly reddish on basal $\frac{1}{3}$ of 3rd tergum. Male: Aedeagal apodeme with large apicolateral prong; aedeagus not produced anterodorsally (Fig. 7) *hermonensis* Kaplan, new species
 - Abdomen extensively red; abdominal margin beyond 2nd tergum red. Male: Aedeagal apodeme without an apicolateral prong; aedeagus produced anterodorsally (Goeldlin 1976: 87, Fig. 6) *bicolor* (Fabricius)



Figs. 1-8. 1-2, Head, dorso-oblique view. 3-4, Head, lateral view. 5-8, Male genitalia. 5, 9th tergum and associated structures, lateral view. 6-7, 9th sternum and associated structures, lateral view. 8, Superior lobe, lateral view. 1, 4, *Cheilosia sulcifrons*. 2, *C. barbata*. 3, *C. sareptana*. 5, 7, 8, *Paragus hermonensis*. 6, *P. majoranae*.

Paragus hermonensis Kaplan, NEW SPECIES

Figs. 5, 7, 8, 19

Size.—Body, male, 6.2 mm, female 5.4 mm; wing, male 4.4 mm, female 4.1 mm.

Male.—*Head*: Face yellow except slightly brownish on tubercle and oral margin, with white pile; cheek black, with white pollen and pile; frontal triangle small, yellow, with white pile except for a few black hairs around frontal lunule; vertical triangle $3.5\times$ as long as frontal triangle, bluish black, with white pollen anteriorly, shiny posteriorly, with yellowish pile except for a few black hairs intermixed on ocellar triangle; occiput bluish black, with white pollen and pile on ventral $\frac{2}{3}$, shiny and with yellowish pile on dorsal $\frac{1}{3}$; eye contiguity about $\frac{1}{3}$ as long as frontal triangle. *Antenna*: Basal 2 segments black, with sparse white pollen and black pile; 3rd segment dark brown, $3\frac{1}{3}$ times as long as wide; arista dark brownish orange, shorter than 3rd antennal segment.

Thorax: Bluish black; mesonotum shiny except for white pollinose submedial vitta which extends from anterior margin to slightly beyond transverse suture, with yellowish pile; pleura with sparse white pollen and white pile; scutellum black basally, yellow on apical $\frac{1}{3}$; squama white with yellowish margin and fringe; halter brown on stem, yellow on capitulum. Wing (Fig. 19): Hyaline, microtrichose as figured; stigma brown. Legs: Mainly orangish yellow; coxae and trochanters black, with white pile; fore- and midfemora black on basal $\frac{1}{3}$; hindfemur black on basal $\frac{2}{3}$, with yellowish pile; hindtibia with brownish subapical annulus, with white and yellowish pile; hindbasitarsomere brownish orange dorsally.

Abdomen: Dorsum black with reddish-orange fasciae on 2nd through 4th terga, with black pile except white on fasciae, basolateral $\frac{2}{3}$ of 2nd, basolateral $\frac{1}{3}$ of 3rd and 4th terga and genitalia; fasciae on 2nd tergum isolated from lateral margin, on 3rd and 4th terga broadly continuous with lateral margin, on 4th tergum interrupted medially, with white pollen and pile; sterna brownish black, with sparse gray pollen and white pile. Male genitalia (Figs. 5, 7): Cercus simple; surstyle simple; 9th tergum simple; 9th sternum simple; lingula elongate, simple apically, with flared lateral margin, with lateral margin not emarginate; aedeagal apodeme with small apicolateral prong; aedeagus with basolateral lobe with shallow apical emargination bordered by small teeth.

Female.—Similar to male except for normal sexual dimorphism and: Face with broad brownish-black medial vitta that is about $\frac{1}{3}$ as wide as face; frons shiny black except with very narrow white pollinose vitta along eye margin.

Variation.—Body size ranges from 4.4 mm to 6.2 mm; 3rd antennal segment color ranges from entirely dark brown to having basoventral $\frac{1}{4}$ orange;

scutellum color ranges from almost entirely black to apical $\frac{2}{3}$ yellow; hind-tibia frequently lacks subapical brownish annulus; abdominal pale fasciae range from being small and narrow to large and broad, at their greatest extent they occupy middle of 2nd, anterior $\frac{1}{2}$ of 3rd, and anterior $\frac{1}{3}$ of 4th tergum; aedeagus varies in shape as figures (*v.i.*, and Fig. 7, 8).

Types.—Holotype ♂, Israel, Mt. Hermon, 2000 m, 8 August 1973, M. Kaplan. Allotype ♀, 4 ♂, 3 ♀ paratypes with same data as holotype; 38 ♂, 6 ♀ paratypes from same locality, from 6 May to 23 September, from 1400 m to 2000 m, collected by A. Freidberg, F. Nachbar, J. Kugler, as well as M. Kaplan. A single ♂ from Italy, Lombardy, Resegone (near Lake Como), 26 August 1900, M. Bezzi, was also examined (USNM). Holotype, allotype and most paratypes deposited in the Entomological Collection of the Department of Zoology, Tel Aviv University; paratypes deposited also in British Museum (Natural History), London, Canadian National Collection, Ottawa, and U.S. National Museum, Washington, D.C.

Remarks.—*Paragus hermonensis* is very similar to *majoranae* Rondani and will key to that species in Goeldlin's revision (1976). The following couplet distinguishes the two species:

1. Wing extensively bare basomedially, with 2nd costal cell microtrichose on apical $\frac{1}{4}$ or less (Fig. 19); abdomen black, with reddish-orange fasciae on 2nd through 4th terga. Male: Lingula not emarginate laterally; aedeagal apodeme with posterolateral prong small, blunt apically; aedeagus with basolateral lobe not strongly toothed, with posteroventral tooth frequently absent (Fig. 7) *hermonensis* Kaplan, new species
- Wing more extensively microtrichose, with 2nd costal cell microtrichose on apical $\frac{1}{2}$ (Fig. 20); abdomen usually entirely black. Male: Lingula with flared lateral margin emarginate subapically; aedeagal apodeme with its posterolateral prong large and acute apically; aedeagus with basolateral lobe strongly toothed (Fig. 6) *majoranae* Rondani

The specific epithet, an adjective, is derived from the name Mount Hermon, where this species is found. A single male has been collected from another locality (Israel, Upper Galilee, Nahal Amud, 31 October 1972, M. Kaplan) and, while very similar to *hermonensis*, differs in the shape of the ventral lobe of basolateral lobe of the aedeagus (Fig. 8). As this male is unique, we are unsure whether it represents a new species or an aberrant individual of *hermonensis*.

Genus *Cheilisia* Meigen

Cheilisia is the largest genus of flower flies, with more than 285 species described from the Palaearctic Region. Only 6 species occur in Israel, where

the genus is uncommon and restricted to the northern and mountainous part of the country. The last comprehensive key to the Palaearctic species of *Cheilosia* is that in Sack (1928: 39), which was based on Becker's monograph (1894). Sack included 144 species in his key. About 126 species have been described since Sack's work, and his key did not include 13 previously described species.

KEY TO THE SPECIES OF *CHEILOSIA* FOUND IN ISRAEL

1. Eye bare; face bare 2
- Eye pilose 4
2. Antennal pits confluent, not separated by frontal lunule; arista pubescent, with hairs at least as long as aristal width; facial tubercle very broad, reaching lateral facial margin 3
- Antennal pits isolated, separated by ventral extension of frontal lunule; arista appearing bare, with hairs much shorter than aristal width; facial tubercle narrow, isolated from lateral facial margin ..
..... *latifacies* Loew
3. Third antennal segment dark, reddish brown to brownish black. Male: Thorax with extensive black pile; black pile on mesopleuron, pteropleuron and broadly submedially on mesonotum. Female: Face orange ventrolaterally; 3rd antennal segment circular, about as long as wide *scutellata* (Fallén)
- Third antennal segment pale, bright orange. Male: Thorax almost entirely with pale pile, with only a few black hairs intermixed on lateral margin of mesonotum. Female: Face black; 3rd antennal segment more elongate, about 1½× as long as wide .. *soror* (Zetterstedt)
4. Face bare 5
- Face pilose (Fig. 4) *sulcifrons* Kaplan, new species
5. Fore- and midbasitarsomeres and hindtarsus brownish black. Male: frontal triangle with black pile unidentified species?
- Fore- and midbasitarsomeres and 2nd through 4th tarsomeres of hindtarsus orange. Male: Frontal triangle with at least some pale hairs, frequently with pile all yellow *sareptana* Becker

Cheilosia sulcifrons Kaplan, NEW SPECIES

Figs. 1, 4, 10, 12, 13, 15

Size.—Body, male 7.5 to 9 mm, female 8.5 mm; wing, male 7 to 8 mm, female 7 mm.

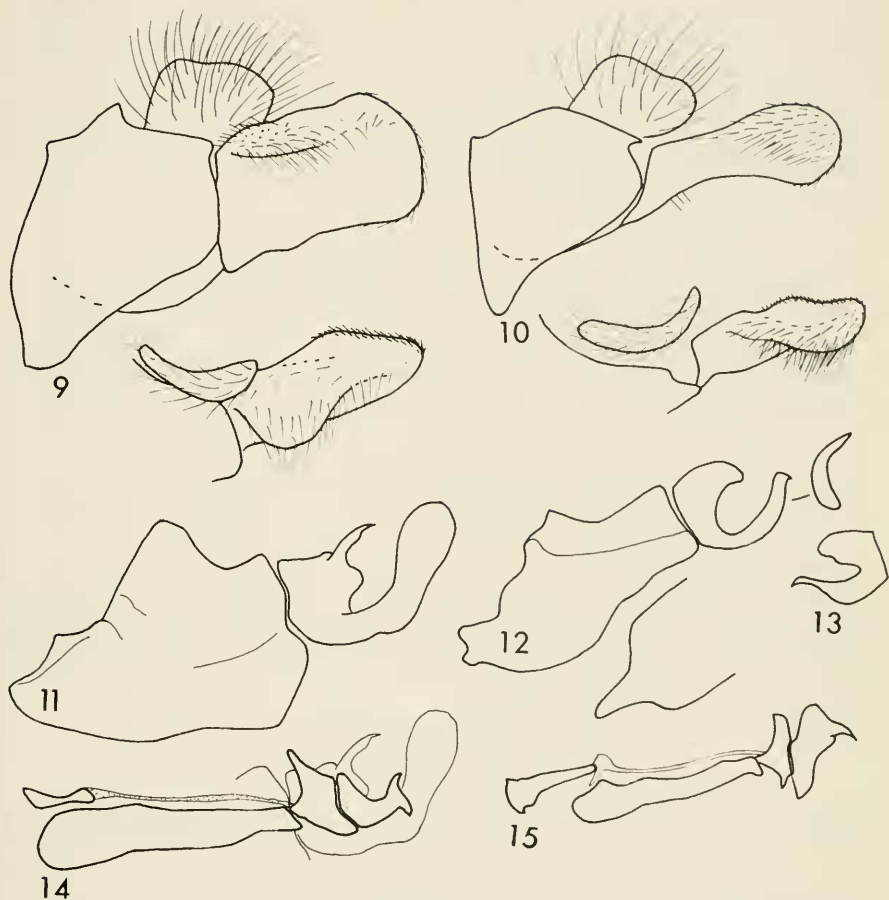
Male.—*Head* (Fig. 4): Face black, with white pile and pollen except bare and slightly shiny tubercle; facial tubercle low, abrupt dorsally, strongly concave ventrally; cheek black, with white pile; frontal triangle black, shiny except with sparse white pollen laterally, with long erect black pile, mod-

erately swollen, with longitudinal medial sulcus; frontal lunule brown; antennal pits separate; vertical triangle black, with intermixed yellow and black pile; occiput black, with white pile and pollen, with row of long black hairs and with pollen sparse on dorsal $\frac{1}{3}$; eye contiguity as long as frontal triangle; eye with dense white pile. *Antenna*: Basal 2 segments dark brownish black, with black pile; 3rd segment oval, orange except dorso-apical margin brown; arista black, about $1\frac{2}{3}$ times as long as antenna, thick on basal $\frac{1}{4}$, elsewhere thin, with very short aristal hairs, their length less than $\frac{1}{4}$ aristal width.

Thorax: Black, shiny, with bronze tinge, with long intermixed yellow and black pile; mesonotum with sparse pollen, subshiny; scutellum with long black marginal hairs, these hairs not thick nor bristlelike; pleura with sparse pollen; sternopleuron continuously pilose; metathoracic spiracle with golden fringe; squama white, with yellowish margin and fringe; halter brown, with yellow stem. *Wing*: Slightly brownish, densely microtrichose; stigma yellowish brown. *Legs*: Mainly black and with white pile; femora orange brown on apex, with sparse white pollen on dark areas; front femur with black pile posteriorly; hind femur with some black spinose hairs ventrally; front tibia orange brown on basal $\frac{1}{3}$ and apex, with black pile posteriorly; middle tibia orange brown on basal $\frac{1}{2}$ and apex, with black pile anterodorsally; hind tibia orange brown on basal $\frac{1}{3}$ and apex, with black pile anterodorsally.

Abdomen: Dorsum black, shiny laterally and apically, with gray pollen sublaterally on 2nd and 3rd terga and dull black pollen medially on 2nd and 3rd terga; dorsal pile yellowish except with some intermixed black hairs apically on 4th tergum and genitalia, long, erect, except shorter mesally; sterna brownish black, with dense gray pollen and sparse long yellow pile. *Male genitalia* (Figs. 10, 12, 13, 15): Cercus quadrate, pilose; surstyle elongate, broader apically, without a distinct lateral carina, but swollen dorso-apically; 9th sternum with lingular area simple, triangular; superior lobes slightly asymmetric, with dorso-apical prong short and blunt, with ventro-apical prong elongate and acute; ejaculatory apodeme elongate and flared anteriorly, triangular; aedeagus two-segmented, with basal portion short and elongate dorsoventrally, with apical portion also elongate dorsoventrally and with apical hook.

Female.—Similar to male except for normal sexual dimorphism and: pile shorter, more extensively pale; frons at antennal base 3.2 times as wide as 3rd antennal segment, with shallow longitudinal sulcus laterally and a very shallow medial sulcus, with a transverse sulcus dorsad to antennal bases, with pile mostly yellowish, with a few intermixed black hairs; 3rd antennal segment almost entirely orange, only dorsal edge brownish, larger and more quadrate; halter yellow; abdomen more extensively shiny, with medial black pollinose areas reduced and gray pollinose areas enlarged.



Figs. 9-15. Male genitalia of *Cheilosia* species. 9-10, 9th tergum and associated structures, lateral view, with dorsal view of cercus and surstyle. 11-12, 9th sternum and associated structures, lateral view, with outline of lingular area and posterior view of apex of right superior lobe in Fig. 12. 13, Left superior lobe, lateral view. 14-15, Aedeagus and associated structures, lateral view. 9, 11, 14, *C. sareptana*. 10, 12, 13, 15, *C. sulcifrons*.

Types.—Holotype ♂, Israel, Merom Golan, 15 March 1975, M. Kaplan. Allotype ♀, 2 ♂ and 1 ♀ paratypes with same data as holotype; one other ♀ paratype from type-locality but collected 18 March 1973 by M. Kaplan. 2 ♂ paratypes, Israel, Mt. Hermon, 1650 m, 22 July 1973, A. Freidberg; 1 ♀ paratype same locality but 1600 m, 6 May 1975, M. Kaplan. 5 ♂, 1 ♀ paratypes, Turkey, 16 km west of Gaziantep, at Buyukaraptat village, along Adana-Gaziantep Highway E 24, 17 May 1967, P. H. Dunn, swept from *Cardaria draba* (Linnaeus). Holotype, allotype and some paratypes depos-

ited in the Entomological Collection, Department of Zoology, Tel Aviv University; other paratypes deposited in British Museum (Natural History), London; Canadian National Collection, Ottawa, and U.S. National Museum, Washington, D.C.

Remarks.—*Cheilosia sulcifrons* belongs to group B and keys to *frontalis* Loew and *barbata* Loew in Sack (1928: 44). These species can be distinguished by the following couplets:

1. Arista pubescent, with hairs as long as or longer than arista width; sternopleuron with pile continuous. Male: Frontal triangle small, shorter than eye contiguity, not swollen (Fig. 2); eye pile yellowish brown; mesonotum subshiny; squamal fringe orange. . . *barbata* Loew
- Arista appearing bare, with hairs much shorter than arista width. Male: Frontal triangle large, longer than eye contiguity, swollen (Fig. 1) 2
2. Sternopleuron with pile broadly separated. Male: Eye pile brown; mesonotum dull, with dense pollen *frontalis* Loew
- Sternopleuron with pile continuous. Male: Eye pile white; mesonotum subshiny, with sparse pollen . . . *sulcifrons* Kaplan, new species

The specific epithet, *sulcifrons*, is a noun formed from the Latin noun, *sulcus*, meaning "groove," and the Latin noun, *frons*, meaning forehead, and refers to the longitudinal groove on the frons of the males.

Cheilosia sareptana Becker

Figs. 3, 9, 11, 14

Chilosia sareptana Becker, 1894: 418. Type-locality: USSR, "Sarepta." Lectotype ♀ in Zool. Mus. Humboldt-Univ., Berlin.

Size.—Body, male 8.8 to 11.3 mm, female 8.5 to 10.7 mm; wing, male 7.7 to 9.2 mm, female 6.6 to 8.5 mm.

Male.—*Head* (Fig. 3): Black; face bare, with gray pollen; facial tubercle large, so that facial profile is gently sloping dorsally, strongly concave ventrally; facial stripe broad, with short white pile; cheek with sparse gray pollen, with yellow pile; frontal triangle large, swollen, about 1.3× as long as eye contiguity, with sparse gray pollen except dense laterally, with pile black and intermixed with a few yellowish hairs, with medial sulcus; frontal lunule dark brown; antennal pits separate; vertical triangle with gray pollen and yellow pile, $\frac{5}{8}$ as long as frontal triangle; occiput with white pollen and yellow pile; eye contiguity longer than vertical triangle; eye with dense white pile. Antenna: 1st segment brownish black, with orange pile; 2nd segment brown, with orange pile; 3rd segment orange except slightly brownish dorsoapically, elongate, about 2× as long as wide; arista black, $\frac{7}{8}$ as long as

antenna, bare, with arisal hairs microscopic and much shorter than arisal width.

Thorax: Black, with pile long, dense, almost entirely yellow except for a few black hairs on mesonotum near wing base and on sternopleuron; mesonotum shiny, with bronze tinge, finely punctate, with very sparse pollen laterally; pleura with dense pollen; sternopleuron with pile widely separated; metathoracic spiracle with golden-brown fringe; squama white with yellow margin and fringe; halter orange. Wing: Slightly yellowish brown, densely microtrichose; stigma orange; veins brown except more yellowish basally. Legs: Coxae and trochanters black, with white pollen and yellow pile; femora black except orange apex, with orange pile except for some intermixed black hairs, especially posteriorly on forefemur; tibiae orange, with orange pile; fore- and midtarsi orange except black apical tarsomere, with orange pile except black on apical tarsomere; hindtarsus orange on 2nd through 4th tarsomeres, with basomere broadly brownish black medially, with apical tarsomere black, with black pile.

Abdomen: Elongate, with parallel margins, narrower than thorax; dorsum black, shiny laterally and on 4th tergum, with silvery pollen basomedially and black pollen apicomediaally, with dense erect long orange pile; sterna brownish black, with sparse gray pollen, with pile erect and long yellow on basal sterna and laterally on apical sterna, with pile appressed and short, black medially on apical sterna. Male genitalia (Figs. 9, 11, 14): Cercus quadrate, pilose; surstyle rectangular, with a strong dorsobasal carina laterally; 9th sternum with lingular area simple, rectangular; superior lobes symmetric, with a small acute dorso-apical prong, with a large lobate ventro-apical prong; ejaculatory apodeme simple, short, rod-shaped; aedeagus 2-segmented, with basal portion trapezoidal, with apical portion strongly V-shaped in dorsal view, elongate, curved, with dorso- and ventro-apical teeth.

Female.—Similar to male except for normal sexual dimorphism and: Pile shorter; with less black hairs; facial tubercle more distinct, more strongly concave ventrally; frons at antennal base $3.5\times$ as wide as 3rd antennal segment, shiny except gray pollinose basolaterally, with short orange pile; 3rd antennal segment shorter and broader.

Specimens examined.—ISRAEL: Merom Golan, 18 March 1973, M. Kaplan, 20 ♂, 6 ♀; 15 ♂, 4 ♀ from same locality but collected by A. Friedberg, F. and M. Kaplan on 15 March 1975; Qusbiye, 16 March 1975, F. Kaplan, 2 ♂; Tanur, 15 March 1975, F. Kaplan, 2 ♀; Jerusalem, 28 February 1956, 1 ♀. Material deposited in the Entomological Collection, Department of Zoology, Tel Aviv University; British Museum (Natural History), London; Canadian National Collection, Ottawa; and U.S. National Museum, Washington, D.C.

Remarks.—*Cheilosia sareptana* belongs to group C and keys to *schineri* Egger in Sack (1928: 47). These species are separated by the following couplet:

1. Fore- and midtarsi with basal 4 tarsomeres orange, only apical tarsomere black; arista, frontal lunule and basal 2 antennal segments brown; facial tubercle large, distinct, strongly concave ventrally (Fig. 3) *sareptana* Becker
- Fore- and midtarsi with basal 3 tarsomeres orange, with apical 2 tarsomeres black; arista, frontal lunule and basal 2 antennal segments orange; facial tubercle small, indistinct, not strongly concave ventrally (Sack 1929: 99, Fig. 148) *schineri* Egger

Cheilosia sareptana Becker was described from and is apparently known from just 2 females collected by Christoph from "Sarepta" and in the Loew Collection. In the Zoologisches Museum of the Museum für Naturkunde der Humboldt-Universität zu Berlin, there is a single female labeled "Sarepta / Christoph," (black circle), "Coll. / H. Loew," "Typus" (red), and "Cheilosia sareptana B" (handwritten, but neither in Loew's nor Becker's hand), which is designated *Lectotype* and has been so labeled. The only difference between the lectotype and our Israeli material is that the pile on the head and thorax of the lectotype is pale yellowish white instead of bright golden yellow. This difference is undoubtedly the result of bleaching due to the age of the type. As the male of *sareptana* was previously unknown, we have redescribed the species.

Genus *Brachyopa* Meigen

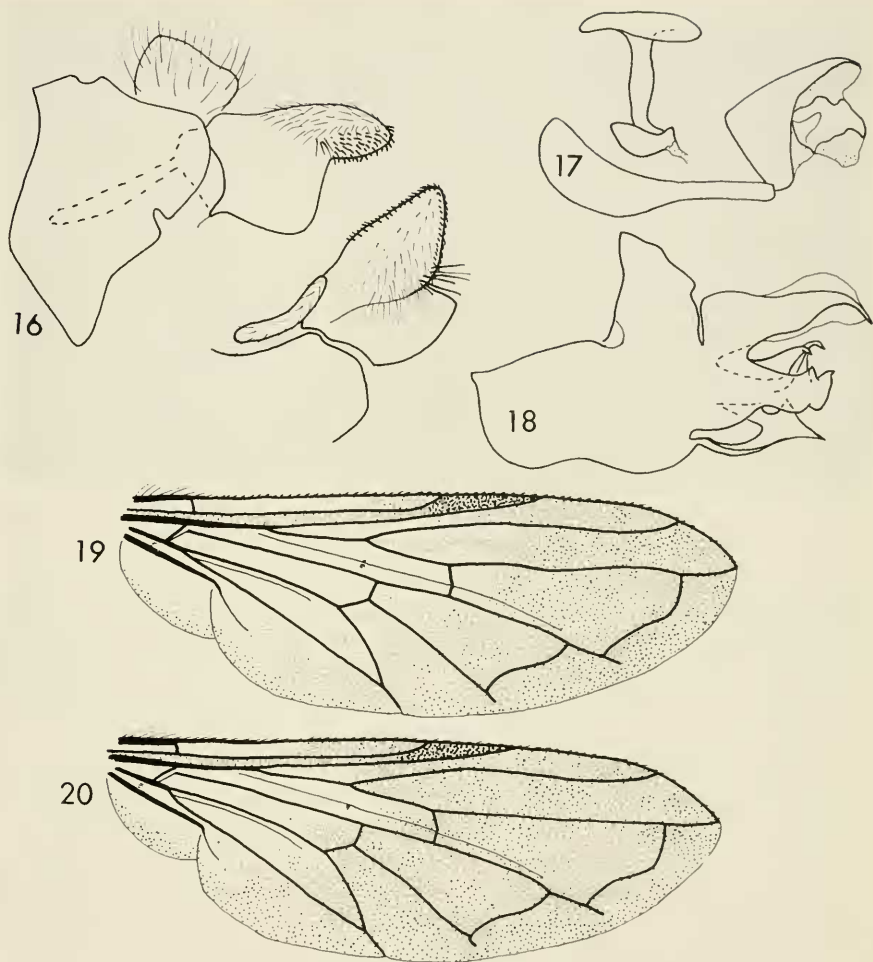
Brachyopa Meigen is a small genus of North Temperate flower flies, whose larvae breed in sap wound in trees. Thompson (1980) provided a key to the Palaearctic species as well as a review of their nomenclature. The species described below is the only one known from Israel and represents southern most limit of the genus in the Palaearctic Region.

Brachyopa quadrimaculosa Thompson, NEW SPECIES

Figs. 16–18, 21, 22

Size.—Body, male 6.9 mm, female 5.2 mm; wing, male 6.5 mm, female 5.0 mm.

Male.—*Head* (Fig. 22): Face orange, slightly brownish laterally, with dense grayish-white pollen; cheek orange, with dense white pollen, with white pile; frontal triangle orange medially, brownish black laterally, shiny on anterior ½, with dense grayish-white pollen posteriorly; vertical triangle black, with dense grayish-white pollen, with white pile; occiput black, with dense grayish-white pollen, with white pile except for a few black cilia on dorsal ¼; eye contiguity short, about as long as ocellar triangle. Antenna



Figs. 16–20. 16–18, Male genitalia of *Brachyopa quadrimaculosa*. 19–20, Wing, dorsal view. 16, 9th tergum and associated structures, lateral view, with dorsal view of cercus and surstyle. 17, Aedeagus and associated structures, lateral view. 18, 9th sternum and associated structures, lateral view. 19, *Paragus hermonensis*. 20, *P. majoranae*.

orange, with black pile; 3rd segment oval, about $\frac{3}{4}$ as wide as long, with a very small sensory pit; arista appearing bare, with hairs very short, less than $\frac{1}{4}$ as long as aristal width.

Thorax (Fig. 21): Black, generally with dense gray pollen; humerus and propleuron with white pile; mesonotum with two large and one minute shiny maculae, with minute macula slightly mesad and posteriad to humerus, with one of large macula anterior to transverse suture and mesad to notopleuron

and other macula at end of transverse suture, with black appressed pile except for a few scattered and intermixed white hairs on margins; pleura with white pile; mesopleuron with 2 apicoposterior black bristles; sternopleuron with dorsal and ventral pile patches broadly separated; postalar callus with 2 strong black bristles; scutellum brownish black and with gray pollen on basal $\frac{1}{2}$, orange and shiny apically, with erect white pile, with 3–4 strong marginal bristles on each side; squama and plumula white; halter orange. Wing: Hyaline, microtrichose; stigma yellowish. Legs: Orange except brownish tarsi, with sparse grayish-white pollen, with pale pile except with a few black bristlelike hairs apicoposteriorly on fore- and midfemora; hindfemur with black spinose hairs ventrally along almost its whole length.

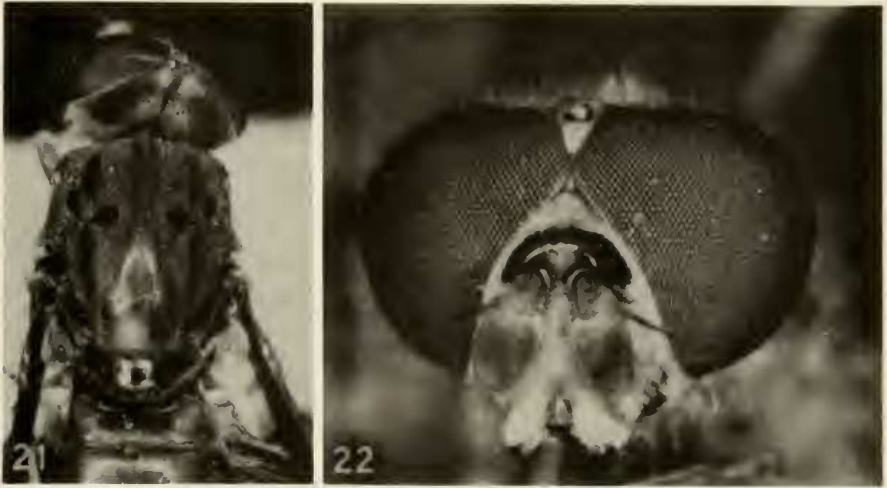
Abdomen: Orange except gray 1st segment and dark brownish-orange genitalia, with white pile; terga shiny except gray pollinose 1st tergum; sterna with dense grayish-white pollen; genitalia shiny except gray pollinose 9th tergum. Male genitalia (Figs. 16–18): Cercus quadrate, pilose; surstyle quadrate with a pilose dorso-apical lobe, with dorso-apical lobe acute in dorsal view and not recurved apically, with dorso-apical lobe with strong short setae ventrally and medially; 9th sternum with well-developed lingula; lingula rectangular, with an acute anterior directed dorsal lobe; superior lobe complex; dorsal lobe of superior lobe elongate, acute apically, semi-sclerotized dorsally and ventro-apically; ventral lobe of superior lobe elongate, with 2 dorso-apical teeth and 2 ventro-apical lobes; superior lobe with 2 mesial processes between dorsal and ventral lobes, with one produced dorsally as an anterior-posteriorly flattened lobe, and other process as an elongate and apically and acutely bifid lobe, which extends over the 1st mesial lobe; ejaculatory apodeme umbrella-shaped; aedeagus 2-segmented, with large basal hood and lateral process arising apically under hood.

Female.—Similar to male except for normal sexual dimorphism and: Face shiny on ventral $\frac{1}{2}$; front black on dorsal $\frac{2}{3}$, with dense gray pollen and white pile on dorsal $\frac{2}{3}$, orange medially and black laterally as well as shiny on ventral $\frac{1}{3}$; 3rd antennal segment larger, without sensory pit.

Types.—Holotype ♂, Israel, Monfort, 4 March 1976, A. Freidberg. Allotype ♀, 11 ♂, 2 ♀ paratypes with same data as holotype but collected by A. Freidberg and M. Kaplan. Holotype, allotype and most paratypes deposited in the Entomological Collection, Tel Aviv University; other paratypes deposited in British Museum (Natural History), London, Canadian National Collection, Ottawa, and U.S. National Museum, Washington, D.C.

Remarks.—*Brachyopa quadrimaculosa* is readily distinguished from all other known congeners by its shiny maculae on the mesonotum. The specific epithet is an adjective from the Latin adjective, *quadrate*, meaning “four-fold,” and the Latin adjective, *maculosus*, meaning “spotted,” and refers to the marks on the mesonotum.

In Thompson's (1980) key to Palaearctic *Brachyopa*, *quadrimaculosa* will



Figs. 21–22. *Brachyopa quadrimaculosa*. 21, Thorax, dorsal view. 22, Head, frontal view.

run to couplet 8 (*insensilis* Collin and *bicolor* (Fallén)) and agrees in part with each alternative. The key is modified to include *quadrimaculosa* by deleting the last character ("propleuron (proepimeron) bare") in the first alternative of couplet 7 and changing the number from "8" to "8a"; and adding the following new couplet:

- 8a. Mesonotum uniformly covered with gray pollen; propleuron (proepimeron) bare; scutellum almost entirely orange, only rarely with base narrowly grayish, with appressed black pile; frontal triangle and front with ventral 1/3 entirely orange 8
- Mesonotum with gray pollen except for 4 large shiny maculae (Fig. 21); propleuron pilose; frontal triangle and front with ventral 1/3 black on lateral 1/3, orange medially; 3rd antennal segment with a very small sensory pit in male and no pit in female (Fig. 22) *quadrimaculosa* Thompson, new species

Brachyopa quadrimaculosa was collected from inflorescences of *Smyr-nium olusatrum* Linnaeus (Umbelliferae) at the margin of the maquis, a type of dense growth of small trees and shrubs in the Mediterranean area.

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